



Magnetically Coupled Rodless Cylinder Slider Type: Ball Bushing Bearing

Series **CY1L**

ø6, ø10, ø15, ø20, ø25, ø32, ø40

How to Order

CY1L 25 H 300 J79W

Slider type
(Ball bushing bearing)

Bore size

6	6 mm	25	25 mm
10	10 mm	32	32 mm
15	15 mm	40	40 mm
20	20 mm		

Magnetic holding force
Refer to "Magnetic Holding Force" on page 8-15-59.

Standard stroke
Refer to "Standard Stroke" on page 8-15-59.

Number of auto switches

Nil	2 pcs.
S	1 pc.
n	"n" pcs.

Auto switch

Nil	Without auto switch
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* For the applicable auto switch model, refer to the table below.
* Auto switches are shipped together, (but not assembled).

Adjustment type

Nil	With adjusting bolt
B	With shock absorbers (2 pcs.)
BS	With shock absorber (With plate A) * Installed on side A at time of shipment.

Applicable Auto Switch/Refer to page 8-30-1 for further information on auto switches.

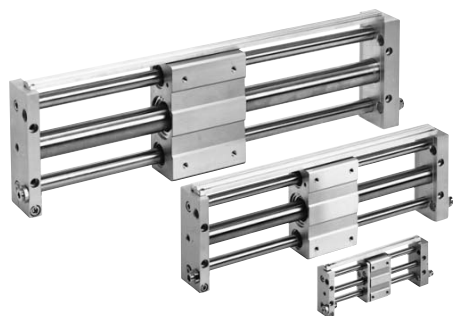
Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length (m) *				Pre-wire connector	Applicable load		
					DC	AC	Perpendicular	In-line	0.5 (Nil)	3 (L)	5 (Z)	None (N)		IC circuit	Relay, PLC	
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A76H	●	●	—	—	—	IC circuit	—	
				—	—	200V	A72	A72H	●	●	—	—	—	Relay, PLC		
	Diagnostic indication (2-color indication)	Connector		2-wire	24 V	12 V	100 V	A73	A73H	●	●	●	●		—	—
				Grommet	—	—	—	A73C	—	●	●	●	●	—	—	
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	F7NV	F79	●	●	○	—	○	IC circuit	Relay, PLC
				3-wire (PNP)				F7PV	F7P	●	●	○	—	○		
		2-wire		F7BV				J79	●	●	○	—	○			
				J79C				—	●	●	●	●	—	—		
	Diagnostic indication (2-color indication)	Connector		3-wire (NPN)	5 V, 12 V	F7NWV	F79W	●	●	○	—	○	IC circuit			
				3-wire (PNP)	—	F7PW	●	●	○	—	○					
	Water resistant (2-color indication)	Grommet		2-wire	12 V	F7BWV	J79W	●	●	○	—	○	—			
					—	F7BA	—	●	○	—	○					
	With diagnostic output (2-color indication)	Grommet		4-wire (NPN)	5 V, 12 V	F7BAV	—	—	●	○	—	○	—			
					—	F79F	●	●	○	—	○	IC circuit				

* Lead wire length symbols: 0.5 m Nil (Example) A73C
 3 m L (Example) A73CL
 5 m Z (Example) A73CZ
 None N (Example) A73CN

* Solid state switches marked with "○" are produced upon receipt of order.

- Since there are other applicable auto switches than listed, refer to page 8-15-67 for details.
- For details about auto switches with pre-wire connector, refer to page 8-30-52.

Magnetically Coupled Rodless Cylinder Slider Type: Ball Bushing Bearing Series CY1L



Long service life design

Ball bushings having excellent trafficability are used in the guides.

Ball bushing: With grease cup

Easy piping and wiring

Hollow shafts are used, and centralization of ports on one side makes piping easy.

Auto switches can be mounted through the use of special switch rails.

Shock absorbers and adjusting bolt are standard equipment

Impacts at stroke end due to high speed use can be absorbed, and fine adjustment of the stroke is possible.

Made to Order Specifications (For details, refer to page 8-31-1.)

Symbol	Specifications
-XB13	Low speed cylinder (5 to 50 mm/s)
-X116	Hydro specifications rodless cylinder
-X168	Helical insert thread specifications
-X322	Outside of cylinder tube with hard chrome plated

Amount of Adjustment by Adjusting Bolt

Bore size (mm)	Amount of adjustment (both ends) by adjusting bolt (mm)
6	12
10	11
15	7
20	11
25	10
32	11
40	9

* Since the cylinder is in an intermediate stop condition when stroke adjustment is performed, use caution regarding the operating pressure and the kinetic energy of the load.

Principal Parts Material

Description	Material	Note
Cylinder tube	Stainless steel	—
Magnet	Rare earth magnet	—
Slide block	Aluminum alloy	Hard anodized

Model

Type	Bearing type	Model	Bore size (mm)	With auto switch	Adjustment type
Slider type	Ball bushing bearing	CY1L	6, 10, 15, 20, 25, 32, 40	D-A7/A8 D-F7/J7	With adjusting bolt With shock absorber

Specifications

Fluid	Air
Proof pressure	1.05 MPa
Maximum operating pressure	0.7 MPa
Minimum operating pressure	0.18 MPa
Ambient and fluid temperature	-10 to 60°C
Piston speed *	50 to 1000 mm/s
Cushion	Shock absorber/Rubber bumper
Lubrication	Non-lube
Stroke length tolerance	0 to 250 st: $^{+1.0}_0$, 251 to 1000 st: $^{+1.4}_0$, 1001 st and up: $^{+1.8}_0$
Mounting orientation	Free
Standard equipment	Auto switch mounting rail

* In the case of setting an auto switch at the intermediate position, the maximum piston speed is subject to restrict for detection upon the response time of a load (Relays, Sequence controller, etc.) the maximum detectable piston speed is controlled by the response time of the load (relays, sequence controller, etc.).

Standard Stroke

Bore size (mm)	Standard stroke (mm)	Maximum available stroke (mm)
6	50, 100, 150, 200	300
10	50, 100, 150, 200, 250, 300	500
15	50, 100, 150, 200, 250, 300, 350, 400, 450, 500	750
20	100, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800	1000
25		1500
32		1500
40	100, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000	1500

Magnetic Holding Force (N)

Bore size (mm)		6	10	15	20	25	32	40
Holding force	Type H	19.6	53.9	137	231	363	588	922
	Type L	—	—	81.4	154	221	358	569

Weight

		(kg)						
		Bore size (mm)						
Number of magnets		6	10	15	20	25	32	40
Basic weight	CY1L□H	0.324	0.580	1.10	1.85	2.21	4.36	4.83
	CY1L□L	—	—	1.02	1.66	2.04	4.18	4.61
Additional weight per each 50mm of stroke		0.044	0.077	0.104	0.138	0.172	0.267	0.406

Calculation

(Example) CY1L32H-500

• Basic weight 4.36 kg • Additional weight 0.267/50 st • Cylinder stroke 500 st
4.36 + 0.267 x 500 ÷ 50 = 7.03 kg

⚠ Precautions

Be sure to read before handling. Refer to pages 8-34-3 to 8-34-6 for Safety Instructions and Actuator Precautions.

Operation

⚠ Warning

1. Be aware of the space between the plates and the slide block.
Take sufficient care to avoid getting your hands or fingers caught when the cylinder is operated.
2. Do not apply a load to a cylinder which is greater than the allowable value stated in the "Model Selection" pages.

Mounting

⚠ Caution

1. Avoid operation with the external slider fixed to the mounting surface.
The cylinder should be operated with the plates fixed to the mounting surface.
2. Perform mounting so that the external slider will operate through the entire stroke at the minimum operating pressure.
If the mounting surface is not flat, the guides will be warped, increasing the minimum operating pressure and causing premature wear of the bearings. Therefore, mounting should be performed so that the external slider will operate through the entire stroke at the minimum operating pressure. A mounting surface with a high degree of flatness is desirable, but in cases where this is not possible, adjust with shims, etc.

Disassembly and Maintenance

⚠ Warning

1. Use caution as the attractive power of the magnets is very strong.
When removing the external slider and piston slider from the cylinder tube for maintenance, etc., handle with caution, since the magnets installed in each slider have a very strong attractive force.

⚠ Caution

1. Use caution when removing the external slider, as the piston slider will be directly attracted to it.
When removing the external slider or piston slider from the cylinder tube, first force the sliders out of their magnetically coupled positions, and then remove them individually when there is no longer any holding force. If they are removed while still magnetically coupled, they will be directly attracted to one another and will not come apart.
2. Since the magnetic holding force can be changed (for example, from CY1S25L to CY1S25H), please contact SMC if this is necessary.
3. Do not disassemble the magnetic components (piston slider, external slider).
This can cause a loss of holding force and malfunction.
4. When disassembling to replace the seals and wear ring, refer to the separate disassembly instructions.
5. Use caution to the direction of the external slider and the piston slider.
Since the external slider and piston slider are directional for $\phi 6$, $\phi 10$ and holding force type L, refer to the figures below when performing disassembly or maintenance. Put the external slider and piston slider together, and insert the piston slider into the cylinder tube so that they will have the correct positional relationship as shown in Fig. (1). If they align as shown in Fig. (2), insert the piston slider after turning it around 180° . If the direction is not correct, it will be impossible to obtain the specified holding force.

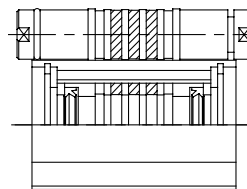


Fig. (1) Correct position

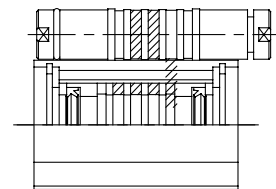


Fig. (2) Incorrect position

Example of $\phi 15$ with holding force type L

Series CY1L Model Selection 1

E: Kinetic energy of load (J)

$$E = \frac{W}{2} \cdot \left(\frac{V}{1000} \right)^2$$

Es: Allowable kinetic energy for intermediate stop using an air pressure circuit (J)

Ps: Operating pressure limit for intermediate stop using an external stopper, etc. (MPa)

Pv: Maximum operating pressure for vertical operation (MPa)

WA: Allowable load weight based on these operating conditions (kg)

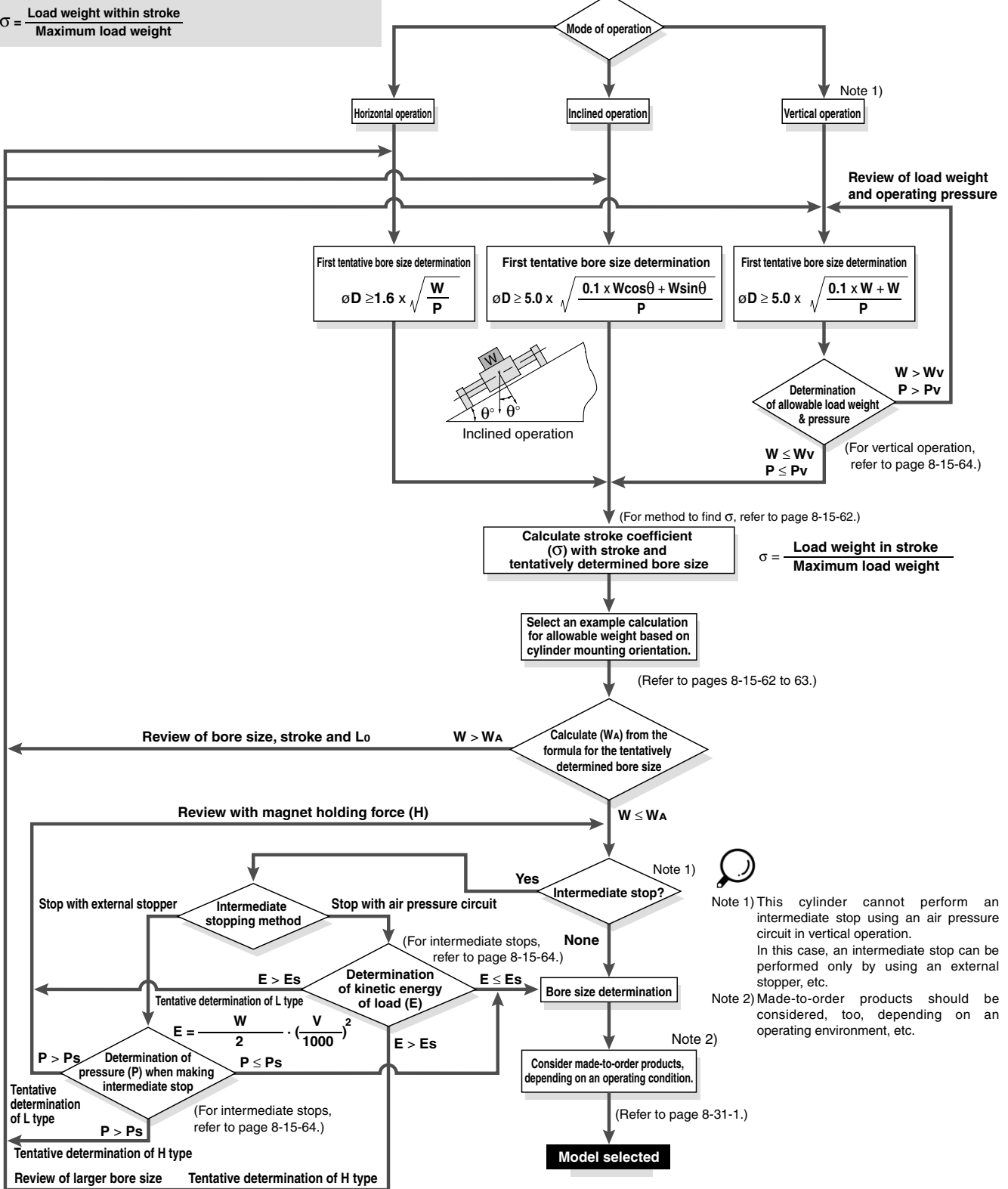
Wv: Allowable load weight for vertical operation (kg)

σ: Stroke coefficient

$$\sigma = \frac{\text{Load weight within stroke}}{\text{Maximum load weight}}$$

Operating Conditions

- W: Load weight (kg)
- V: Speed (mm/s)
- P: Operating pressure (MPa)
- Stroke (mm)
- Lo: Distance from slide block mounting surface to workpiece center of gravity (cm)
- Mode of operation (Horizontal, Inclined, Vertical)



Note 1) This cylinder cannot perform an intermediate stop using an air pressure circuit in vertical operation. In this case, an intermediate stop can be performed only by using an external stopper, etc.

Note 2) Made-to-order products should be considered, too, depending on an operating environment, etc.

- MX
- MTS
- MY
- CY
- MG
- CX
- D-
- X
- 20-
- Data

Series CY1L

Model Selection 2

Caution on Design (1)

How to Find σ when Selecting the Allowable Load Weight

Since the maximum load weight with respect to the cylinder stroke changes as shown in the table below, σ should be considered as a coefficient determined in accordance with each stroke.

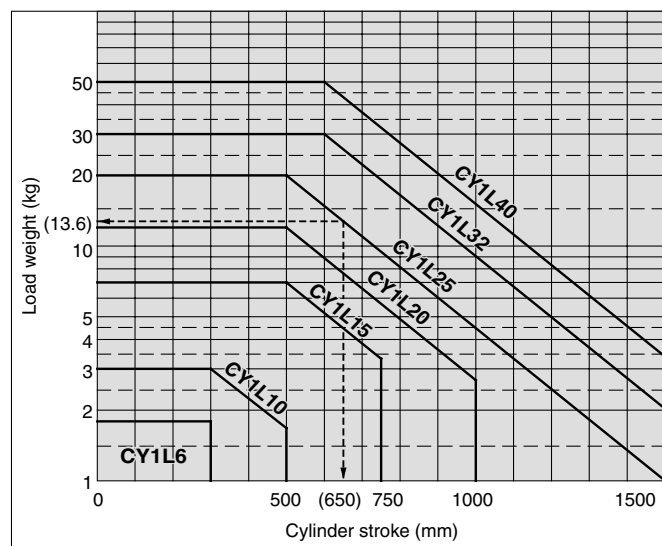
Example) CY1L25□-650

- (1) Maximum load weight = 20 kg
- (2) Load weight for 650 st = 13.6 kg
- (3) $\sigma = \frac{13.6}{20} = 0.68$ is the result.

Calculation Formula for σ ($\sigma \leq 1$)

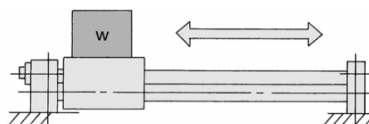
Model	CY1L6	CY1L10	CY1L15
$\sigma =$	1	$\frac{10^{(0.86 - 1.3 \times 10^{-3} \times \text{ST})}}{3}$	$\frac{10^{(1.5 - 1.3 \times 10^{-3} \times \text{ST})}}{7}$
Model	CY1L20	CY1L25	CY1L32
$\sigma =$	$\frac{10^{(1.71 - 1.3 \times 10^{-3} \times \text{ST})}}{12}$	$\frac{10^{(1.98 - 1.3 \times 10^{-3} \times \text{ST})}}{20}$	$\frac{10^{(2.26 - 1.3 \times 10^{-3} \times \text{ST})}}{30}$
Model	CY1L40		
$\sigma =$	$\frac{10^{(2.48 - 1.3 \times 10^{-3} \times \text{ST})}}{50}$		

Note) Calculate with $\sigma = 1$ for all applications up to $\phi 10 - 300$ mmST, $\phi 15 - 500$ mmST, $\phi 20 - 500$ mmST, $\phi 25 - 500$ mmST, $\phi 32 - 600$ mmST and $\phi 40 - 600$ ST.



Examples of Allowable Load Weight Calculation Based on Cylinder Mounting Orientation

1. Horizontal Operation (Floor mounting)



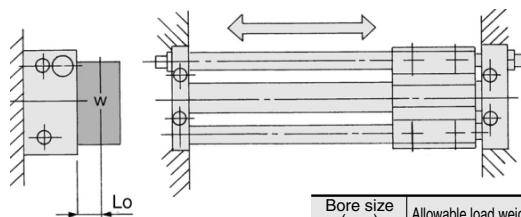
Maximum Load Weight (Center of slide block) (kg)

Bore size (mm)	6	10	15	20	25	32	40
Max. load weight (kg)	1.8	3	7	12	20	30	50
Stroke (Max)	300 st	300 st	500 st	500 st	500 st	600 st	600 st

The above maximum load weight values will change with the stroke length for each cylinder size, due to limitation from warping of the guide shafts. (Take note of the coefficient σ .)

Moreover, depending on the operating direction, the allowable load weight may be different

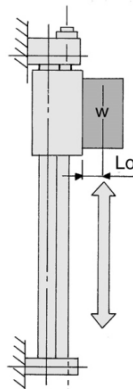
2. Horizontal Operation (Wall mounting)



Lo: Distance from mounting surface to load center of gravity (cm)

Bore size (mm)	Allowable load weight (WA) (kg)
6	$\frac{\sigma \cdot 6.48}{6.8 + 2Lo}$
10	$\frac{\sigma \cdot 15.0}{8.9 + 2Lo}$
15	$\frac{\sigma \cdot 45.5}{11.3 + 2Lo}$
20	$\frac{\sigma \cdot 101}{13.6 + 2Lo}$
25	$\frac{\sigma \cdot 180}{15.2 + 2Lo}$
32	$\frac{\sigma \cdot 330}{18.9 + 2Lo}$
40	$\frac{\sigma \cdot 624}{22.5 + 2Lo}$

3. Vertical Operation



Bore size (mm)	Allowable load weight (WA) (kg)
6	$\frac{\sigma \cdot 1.53}{1.6 + Lo}$
10	$\frac{\sigma \cdot 5.00}{1.95 + Lo}$
15	$\frac{\sigma \cdot 15.96}{2.4 + Lo}$
20	$\frac{\sigma \cdot 31.1}{2.8 + Lo}$
25	$\frac{\sigma \cdot 54.48}{3.1 + Lo}$
32	$\frac{\sigma \cdot 112.57}{3.95 + Lo}$
40	$\frac{\sigma \cdot 212.09}{4.75 + Lo}$

Lo: Distance from mounting surface to load center of gravity (cm)

Note) A safety factor for drop prevention has been taken into account.

Note) Operating pressure should be equal to or less than the maximum operating pressure in the article, "Vertical Operation" listed on page 8-15-64.

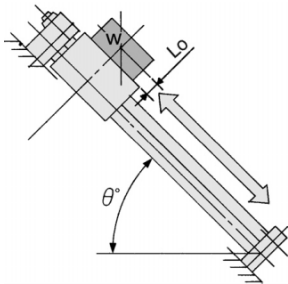
Series CY1L

Model Selection 3

Caution on Design (2)

Example of Allowable Load Weight Calculation Based on Cylinder Mounting Orientation

4. Inclined Operation (In operating direction)



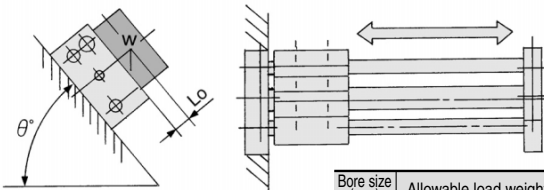
Bore size (mm)	Allowable load weight (WA) (kg)
6	$\sigma \cdot 4.05 K$
	$1.7 \cos \theta + 2 (1.6 + Lo) \sin \theta$
10	$\sigma \cdot 10.2 K$
	$2.8 \cos \theta + 2 (1.95 + Lo) \sin \theta$
15	$\sigma \cdot 31.1 K$
	$2.9 \cos \theta + 2 (2.4 + Lo) \sin \theta$
20	$\sigma \cdot 86.4 K$
	$6 \cos \theta + 2 (2.8 + Lo) \sin \theta$
25	$\sigma \cdot 105.4 K$
	$3.55 \cos \theta + 2 (3.1 + Lo) \sin \theta$
32	$\sigma \cdot 178 K$
	$4 \cos \theta + 2 (3.95 + Lo) \sin \theta$
40	$\sigma \cdot 361.9 K$
	$5.7 \cos \theta + 2 (4.75 + Lo) \sin \theta$

Angle	up to 45°	up to 60°	up to 75°	up to 90°
k	1	0.9	0.8	0.7

Angle coefficient (k): $k = [\text{to } 45^\circ (= \theta)] = 1$,
 $[\text{to } 60^\circ] = 0.9$, $[\text{to } 75^\circ] = 0.8$,
 $[\text{to } 90^\circ] = 0.7$

Lo: Distance from mounting surface to load center of gravity (cm)

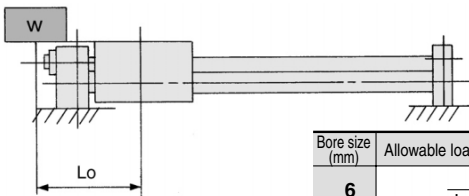
5. Inclined Operation (At a right angle to operating direction)



Lo: Distance from mounting surface to load center of gravity (cm)

Bore size (mm)	Allowable load weight (WA) (kg)
6	$\sigma \cdot 6.48$
	$3.6 + 2 (1.6 + Lo) \sin \theta$
10	$\sigma \cdot 15$
	$5 + 2 (1.95 + Lo) \sin \theta$
15	$\sigma \cdot 45.5$
	$6.5 + 2 (2.4 + Lo) \sin \theta$
20	$\sigma \cdot 115$
	$8 + 2 (2.8 + Lo) \sin \theta$
25	$\sigma \cdot 180$
	$9 + 2 (3.1 + Lo) \sin \theta$
32	$\sigma \cdot 330$
	$11 + 2 (3.95 + Lo) \sin \theta$
40	$\sigma \cdot 624$
	$13 + 2 (4.75 + Lo) \sin \theta$

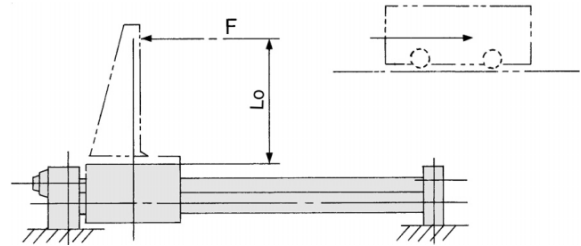
6. Load Center Offset in Operating Direction (Lo)



Lo: Distance from center of side block to load's center of gravity (cm)

Bore size (mm)	Allowable load weight (WA) (kg)
6	$\sigma \cdot 2$
	$Lo + 1.7$
10	$\sigma \cdot 5.6$
	$Lo + 2.8$
15	$\sigma \cdot 13.34$
	$Lo + 2.9$
20	$\sigma \cdot 43.2$
	$Lo + 6$
25	$\sigma \cdot 46.15$
	$Lo + 3.55$
32	$\sigma \cdot 80$
	$Lo + 4$
40	$\sigma \cdot 188.1$
	$Lo + 5.7$

7. Horizontal Operation (Pushing load, Pusher)

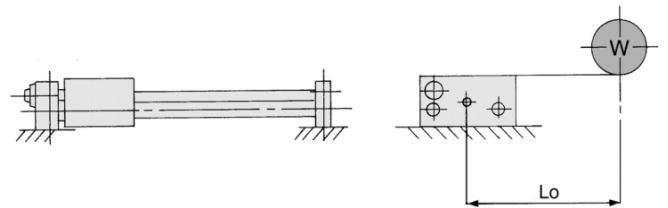


F: Drive (from slide block to position Lo) resistance force (kg)

Lo: Distance from mounting surface to load center of gravity (cm)

Bore size (mm)	6	10	15	20
Allowable load weight (WA) (kg)	$\frac{\sigma \cdot 2.72}{1.6 + Lo}$	$\frac{\sigma \cdot 5.55}{1.95 + Lo}$	$\frac{\sigma \cdot 15.96}{2.4 + Lo}$	$\frac{\sigma \cdot 41.7}{2.8 + Lo}$
	25	32	40	
Allowable load weight (WA) (kg)	$\frac{\sigma \cdot 58.9}{3.1 + Lo}$	$\frac{\sigma \cdot 106.65}{3.95 + Lo}$	$\frac{\sigma \cdot 228}{4.75 + Lo}$	

8. Horizontal Operation (Load, Lateral offset Lo)



Lo: Distance from center of side block to load's center of gravity (cm)

Bore size (mm)	6	10	15	20
Allowable load weight (WA) (kg)	$\frac{\sigma \cdot 6.48}{3.6 + Lo}$	$\frac{\sigma \cdot 15}{5 + Lo}$	$\frac{\sigma \cdot 45.5}{6.5 + Lo}$	$\frac{\sigma \cdot 80.7}{8 + Lo}$
	25	32	40	
Allowable load weight (WA) (kg)	$\frac{\sigma \cdot 144}{9 + Lo}$	$\frac{\sigma \cdot 275}{11 + Lo}$	$\frac{\sigma \cdot 520}{13 + Lo}$	

MX

MTS

MY

CY

MG

CX

D-

-X

20-

Data

Caution on Design (3)

Vertical Operation

When operating a load vertically, it should be operated within the allowable load weights and maximum operating pressures shown in the table below. Use caution, as operating above the prescribed values may lead to dropping of the load.

Bore size (mm)	Model	Allowable load weight (Wv) (kg)	Maximum operating pressure (Pv) (MPa)
6	CY1L6H	1.0	0.55
10	CY1L10H	2.7	0.55
15	CY1L15H	7.0	0.65
	CY1L15L	4.1	0.40
20	CY1L20H	11.0	0.65
	CY1L20L	7.0	0.40
25	CY1L25H	18.5	0.65
	CY1L25L	11.2	0.40
32	CY1L32H	30.0	0.65
	CY1L32L	18.2	0.40
40	CY1L40H	47.0	0.65
	CY1L40L	29.0	0.40

Note) Use caution, since the magnetic coupling may be dislocated if it is used over the maximum operating pressure.

Intermediate Stop

1. Intermediate stopping of load with an external stopper, etc.

When stopping a load in mid-stroke using an external stopper (adjusting bolt, etc.), operate within the operating pressure limits shown in the table below. Use caution, as operation at a pressure exceeding these limits can result in breaking of the magnetic coupling.

Bore size (mm)	Model	Operating pressure limit for intermediate stop (Ps) (MPa)
6	CY1L6H	0.55
10	CY1L10H	0.55
15	CY1L15H	0.65
	CY1L15L	0.40
20	CY1L20H	0.65
	CY1L20L	0.40
25	CY1L25H	0.65
	CY1L25L	0.40
32	CY1L32H	0.65
	CY1L32L	0.40
40	CY1L40H	0.65
	CY1L40L	0.40

2. Intermediate stopping of load with an air pressure circuit

When stopping a load using an air pressure circuit, operate at or below the kinetic energy shown in the table below. Use caution, as operation when exceeding the allowable value can result in breaking of the magnetic coupling.

(Reference values)

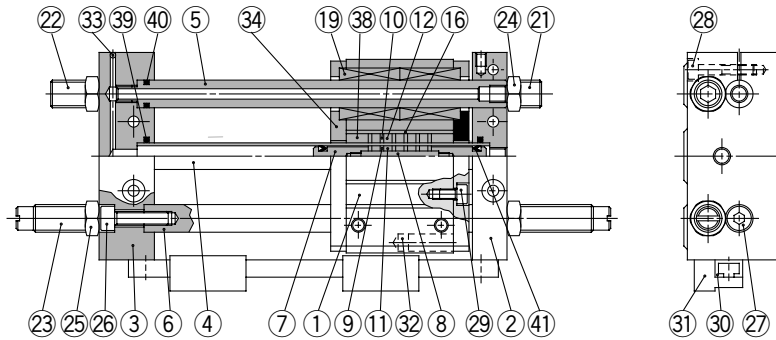
Bore size (mm)	Model	Allowable kinetic energy for intermediate stop (Es) (J)
6	CY1L6H	0.007
10	CY1L10H	0.03
15	CY1L15H	0.13
	CY1L15L	0.076
20	CY1L20H	0.24
	CY1L20L	0.16
25	CY1L25H	0.45
	CY1L25L	0.27
32	CY1L32H	0.88
	CY1L32L	0.53
40	CY1L40H	1.53
	CY1L40L	0.95

Magnetically Coupled Rodless Cylinder Slider Type: Ball Bushing Bearing Series CY1L

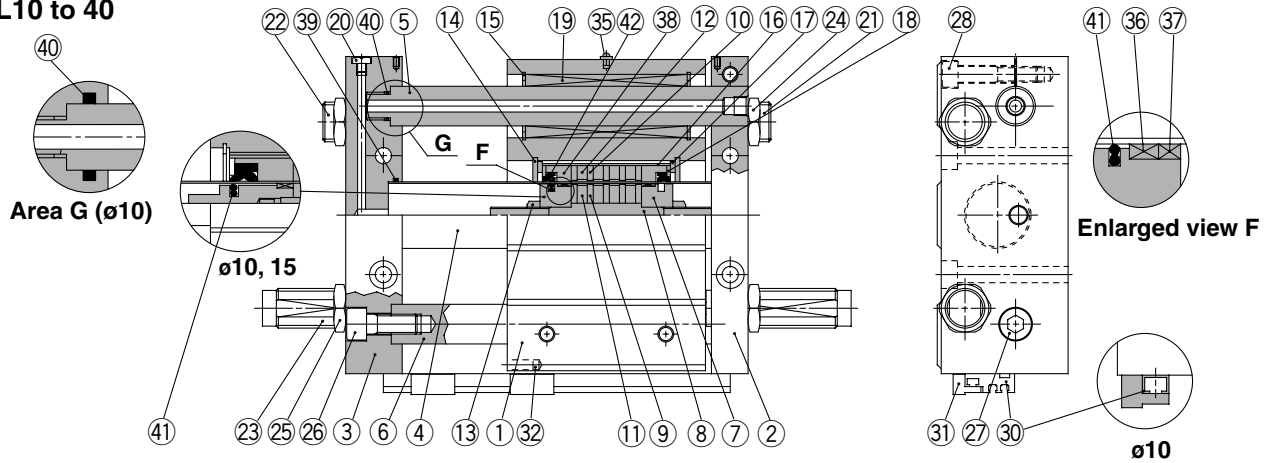
Construction

Slider type/Ball bushing bearing

CY1L6



CY1L10 to 40



- MX
- MTS
- MY
- CY**
- MG
- CX
- D-
- X
- 20-
- Data

Component Parts

No.	Description	Material	Note
①	Slide block	Aluminum alloy	Hard anodized
②	Plate A	Aluminum alloy	Hard anodized
③	Plate B	Aluminum alloy	Hard anodized
④	Cylinder tube	Stainless steel	
⑤	Guide shaft A	Carbon steel	Hard chrome plated
⑥	Guide shaft B	Carbon steel	Hard chrome plated
⑦	Piston	Aluminum alloy ^{Note)}	Chromated
⑧	Shaft	Stainless steel	
⑨	Piston side yoke	Rolled steel	Zinc chromated
⑩	External slider side yoke	Rolled steel	Zinc chromated
⑪	Magnet A	Rare earth magnet	
⑫	Magnet B	Rare earth magnet	
⑬	Piston nut	Carbon steel	Zinc chromated ø25 to ø40
⑭	Snap ring	Carbon tool steel	Nickel plated
⑮	Snap ring	Carbon tool steel	Nickel plated
⑯	External slider tube	Aluminum alloy	
⑰	Slider spacer	Rolled steel	Nickel plated
⑱	Spacer	Rolled steel	Nickel plated
⑲	Ball bushing	—	
⑳	Plug	Brass	ø25, ø32, ø40 only
㉑	Adjusting bolt A	Chromium molybdenum steel	Nickel plated
㉒	Adjusting bolt B	Chromium molybdenum steel	Nickel plated
㉓	Shock absorber	—	
㉔	Hexagon nut	Carbon steel	Nickel plated
㉕	Hexagon nut	Carbon steel	Nickel plated
㉖	Hexagon socket head cap screw	Chromium molybdenum steel	Nickel plated
㉗	Hexagon socket head cap screw	Chromium molybdenum steel	Nickel plated
㉘	Hexagon socket head cap screw	Chromium molybdenum steel	Nickel plated

No.	Description	Material	Note
㉙	Hexagon socket head cap screw	Chromium molybdenum steel	Nickel plated
㉚	Switch mounting rail	Aluminum alloy	
㉛	Auto switch	—	
㉜	Magnet for auto switch	Rare earth magnet	
㉝	Steel ball	—	ø6, ø10, ø15 only
㉞	Side cover	Carbon steel	ø6 only
㉟	Grease cup	Carbon steel	ø15 or larger
㊱*	Wear ring A	Special resin	
㊲*	Wear ring	Special resin	
㊳*	Wear ring B	Special resin	
㊴*	Cylinder tube gasket	NBR	
㊵*	Guide shaft gasket	NBR	
㊶*	Piston seal	NBR	
㊷*	Scraper	NBR	

Replacement Parts: Seal Kit

Bore size (mm)	Kit no.	Contents
6	CY1L6-PS-N	Set of nos. above ㉞, ㉟, ㊱, ㊲, ㊳, ㊴, ㊵, ㊶
10	CY1L10-PS-N	Set of nos. above ㉞, ㉟, ㊱, ㊲, ㊳, ㊴, ㊵, ㊶
15	CY1L15-PS-N	
20	CY1L20-PS-N	Set of nos. above ㉞, ㉟, ㊱, ㊲, ㊳, ㊴, ㊵, ㊶
25	CY1L25-PS-N	
32	CY1L32-PS-N	
40	CY1L40-PS-N	

* Seal kit includes ㉞, ㉟, ㊱, ㊲, ㊳, ㊴, ㊵, ㊶ for ø6. ㉞, ㉟ to ㊱ are for ø10, ø15. ㉞ to ㊱ are for ø20 to ø40. Order the seal kit, based on each bore size.

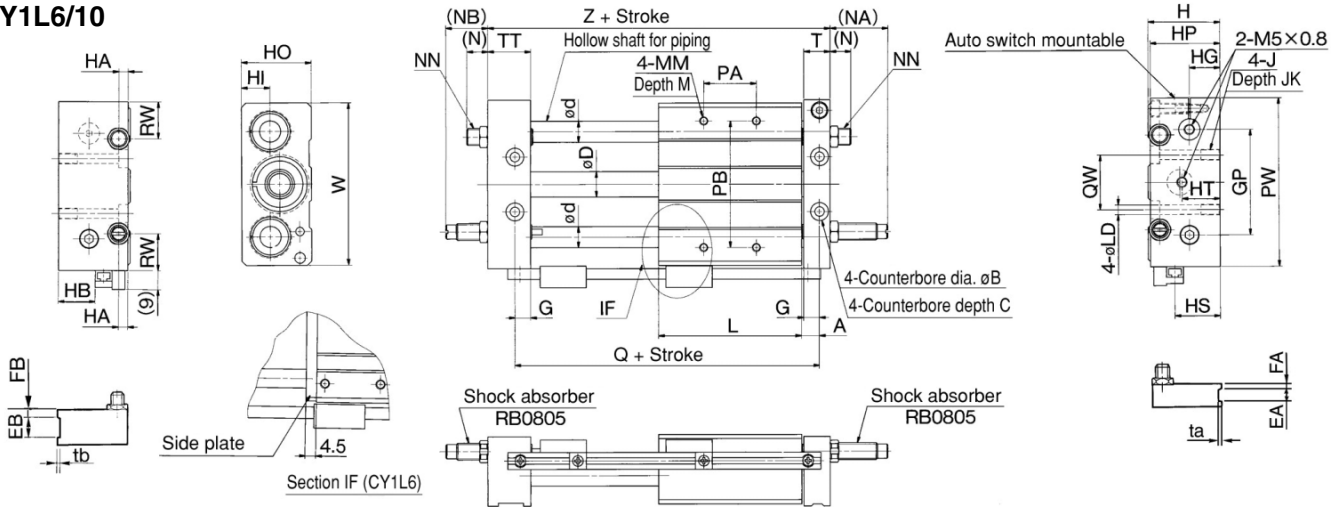
Note) Brass for ø6, ø10 and ø15

Series CY1L

Dimensions

Slider type/Ball bushing bearing

CY1L6/10

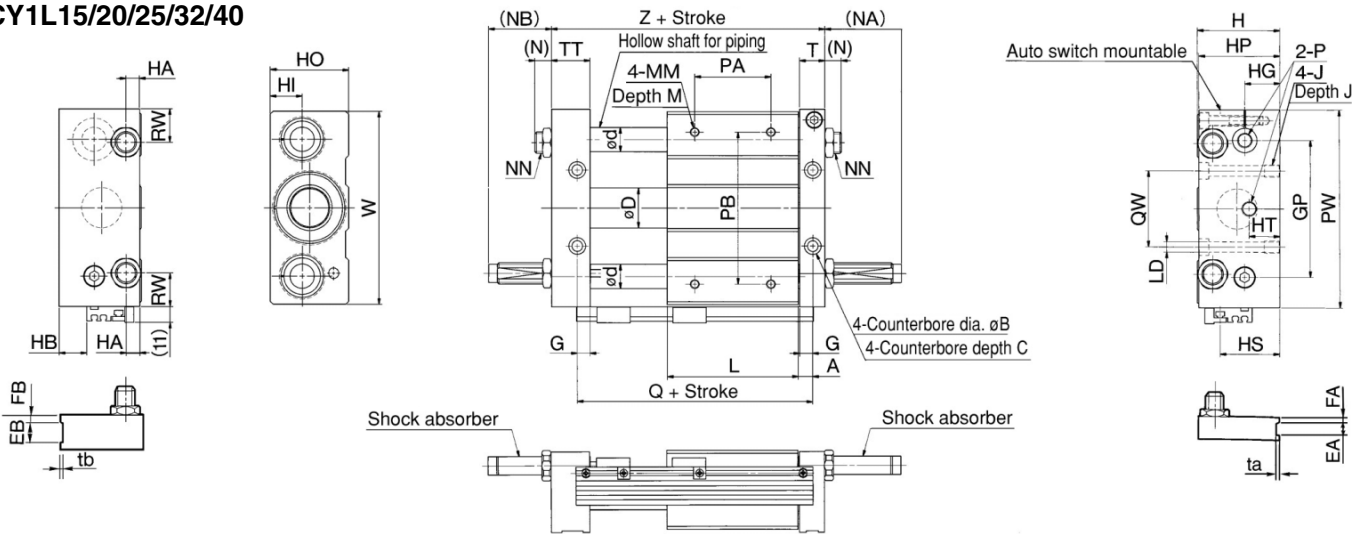


Model	A	B	C	D	d	EA	EB	FA	FB	G	GP	H	HA	HB	HG	HI	HO	HP	HS	HT	J	JK
CY1L6	7	6.5	3	7.6	8	—	—	—	—	6	36	27	6	10	11	9	25	26	14	16	M4 x 0.7	6.5
CY1L10	8.5	8	4	12	10	6	12	3	5	7.5	50	34	6	17.5	14.5	13.5	33	33	21.5	18	M5 x 0.8	9.5

Model	L	LD	M	MM	(N)	(NA)	(NB)	NN	PA*	PB	PW	Q	QW	RW	T	TT	ta	tb	W	Z
CY1L6	40	3.5	6	M4 x 0.7	10	30	24	M8 x 1.0	24	40	60	54	20	12	10	16	—	—	56	68
CY1L10	68	4.3	8	M4 x 0.7	9.5	27	19	M8 x 1.0	30	60	80	85	26	17.5	12.5	20.5	0.5	1.0	77	103

* PA dimensions are for split from center.

CY1L15/20/25/32/40



Model	A	B	C	D	d	EA	EB	FA	FB	G	GP	H	HA	HB	HG	HI	HO	HP	HS	HT	J	JK	L	LD
CY1L15	7.5	9.5	5	16.6	12	6	13	3	6	6.5	65	40	6.5	4	16	14	38	39	25	16	M6 x 1.0	9.5	75	5.6
CY1L20	9.5	9.5	5.2	21.6	16	—	—	—	—	8.5	80	46	9	10	18	16	44	45	31	20	M6 x 1.0	10	86	5.6
CY1L25	9.5	11	6.5	26.4	16	8	14	4	7	8.5	90	54	9	18	23	21	52	53	39	20	M8 x 1.25	10	86	7
CY1L32	10.5	14	8	33.6	20	8	16	5	7	9.5	110	66	12	26.5	26.5	24.5	64	64	47.5	25	M10 x 1.5	15	100	9.2
CY1L40	11.5	14	8	41.6	25	10	20	5	10	10.5	130	78	12	35	30.5	28.5	76	74	56	30	M10 x 1.5	15	136	9.2

Model	M	MM	(N)	(NA)	(NB)	NN	P	PA*	PB	PW	Q	QW	RW	T	ta	tb	TT	W	Z	Shock absorber
CY1L15	8	M5 x 0.8	7.5	27	17	M8 x 1.0	M5 x 0.8	45	70	95	90	30	15	12.5	0.5	1.0	22.5	92	112	RB0805
CY1L20	10	M6 x 1.0	10	29	20	M10 x 1.0	Rc 1/8	50	90	120	105	40	28	16.5	—	—	25.5	117	130	RB1006
CY1L25	10	M6 x 1.0	11	49	40	M14 x 1.5	Rc 1/8	60	100	130	105	50	22	16.5	0.5	1.0	25.5	127	130	RB1411
CY1L32	12	M8 x 1.25	11.5	52	42	M20 x 1.5	Rc 1/8	70	120	160	121	60	33	18.5	0.5	1.0	28.5	157	149	RB2015
CY1L40	12	M8 x 1.25	10.5	51	36	M20 x 1.5	Rc 1/4	90	140	190	159	84	35	20.5	1.0	1.0	35.5	187	194	RB2015

* PA dimensions are for split from center.

Magnetically Coupled Rodless Cylinder Slider Type: Ball Bushing Bearing Series CY1L

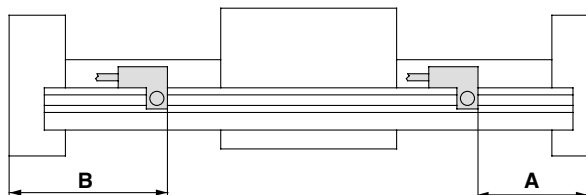
Shock Absorber Specifications/Series RB

For detailed specifications about shock absorber, refer to "Series RB" of Best Pneumatics Vol. 10.

Applicable rodless cylinder	CY1L ⁶ ₁₀ 15	CY1L20	CY1L25	CY1L ³² ₄₀	
Shock absorber model	RB0805	RB1006	RB1411	RB2015	
Maximum energy absorption: (J)	0.98	3.92	14.7	58.8	
Weight equivalent to impact object	* Select a model from data D of Shock Absorber (RB series) of Best Pneumatics Vol. 10.				
Stroke absorption: (mm)	5	6	11	15	
Collision speed: (m/s)	0.05 to 5				
Max. operating frequency: (cycle/min)*	80	70	45	25	
Ambient temperature range	-10 to 80°C				
Spring force: (N)	Extended	1.96	4.22	6.86	8.34
	Retracted	3.83	6.18	15.3	20.50

* It denotes the values at the maximum energy absorption per one cycle. Therefore, the operating frequency can be increased according to the energy absorption.

Proper Auto Switch Mounting Position (Detection at stroke end)

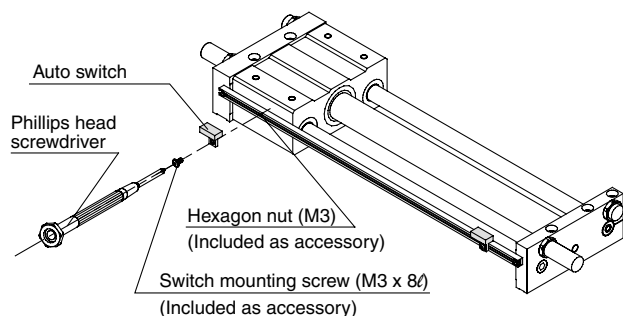


Bore size (mm)	Applicable auto switch							
	D-A73/A80		D-A72 D-A7□H/A80H D-A73C/A80C D-F7□J79 D-F7□W/J79C D-F7□W/J79W D-F7□WV D-F7BAL/F7BAVL		D-F79F		D-F7NTL	
	A	B	A	B	A	B	A	B
6	23	45	23.5	44.5	27.5	40.5	28.5	39.5
10	58	45	58.5	44.5	62.5	40.5	63.5	39.5
15	65	47	65.5	46.5	69.5	42.5	70.5	41.5
20	76	54	76.5	53.5	80.5	49.5	81.5	48.5
25	76	54	76.5	53.5	80.5	49.5	81.5	48.5
32	92	57	92.5	56.5	96.5	52.5	97.5	51.5
40	130	64	130.5	63.5	134.5	59.5	135.5	58.5

Note) 50 mm is the minimum stroke available with 2 auto switches mounted. In the case of a stroke less than this, please contact SMC.

Mounting of Auto Switch

When mounting an auto switch, the switch mounting screw should be screwed into a hexagon nut (M3 x 0.5) which has been inserted into the groove of the switch rail. (Use a tightening torque of approximately 0.05 to 0.1 N·m.)



Operating Range

Auto switch model	Bore size (mm)						
	6	10	15	20	25	32	40
D-A7□/A8□	6	6	6	6	6	6	6
D-F7□/J7□	3	3	4	3	3	3	3.5
D-F79F	4.5	4.5	4.5	4.5	4.5	4.5	4.5

* Since this is a guideline including hysteresis, not meant to be guaranteed. (Assuming approximately ±30% dispersion)
There may be the case it will vary substantially depending on an ambient environment.

Other than the models listed in "How to Order", the following auto switches are applicable.
For detailed specifications, refer to page 8-30-1.

Type	Model	Electrical entry (Fetching direction)	Features
Reed switch	D-A80	Grommet (Perpendicular)	Without indicator light
	D-A80H	Grommet (In-line)	
	D-A80C	Connector (Perpendicular)	
Solid state switch	D-F7NTL	Grommet (In-line)	With timer

* With pre-wire connector is available for D-F7NTL type, too.
For details, refer to page 8-30-52.